



# **1998 Washington State Population Survey**

## **TECHNICAL REPORT #1 – Sample Disposition and Response Rates**

**Office of Financial Management  
Forecasting  
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**T**HIS REPORT is one of several technical appendices prepared by the Office of Financial Management to supplement the 1998 Washington State Population Survey (SPS). The survey was funded by the 1997 Legislature to provide social, demographic, and economic information about Washington residents that would otherwise not be available between the 1990 and 2000 federal census years. A background report on the SPS titled, *1998 Washington State Population Survey Data Report* (September 21, 1998), is available electronically at <http://www.wa.gov/ofm/> under Population/Data, or by calling OFM at (360) 902-0599.

Responses to the survey were obtained from telephone interviews of 7,279 households which represent the state population as a whole. The survey was designed by OFM and conducted by the Washington State University Social and Economic Sciences Research Center (SESRC). Telephone interviews were conducted in Spring 1998.

### **Sample Disposition and Response Rates**

There are two base samples for this survey – a general population sample and an expanded sample of racial minorities. The response rates are calculated separately for the two samples.

The general population sample was drawn using the random digit dialing (RDD) technique. With RDD, all households in the state of Washington with an activated telephone line, either listed or unlisted, had an equal probability of being selected. A target of 6,000 households was planned for the general population sample, the main sample of the SPS.

The expanded sample was drawn from census tract regions that contained the highest concentration (40 percent or more) of minority groups. This allowed researchers to obtain sufficient information on major racial minority groups for statistical analysis – information that would have been missed using the RDD method. The expanded population groups include: Blacks, Native Americans, Asian Americans/Pacific Islanders, and Hispanics. The completion target for each of these four groups was a combined total of 400 households from both the general population sample and the expansion. For instance, if 250 households of the Hispanic group completed interviews in the general population sample, then only 150 completed interviews of the this group would be needed from the expanded sample. A household is defined as a minority household if the respondent is a minority member. The respondent is the household head or the person most knowledgeable about the household's financial situation.

**TABLE 1**  
**Complete Sample Disposition for the General Population Sample**  
**and Expanded Sample Cases**

Sample disposition	OF98 (General Population Sample)	EF98 (Expanded Sample Before Adjustment)	EF98Adj (Expanded Sample after Adjustment)
CM: Completed Interview	6,057	929	929
PC: Partial complete past Q4P14(CI)	165	41	41
PB: Partial complete past Q4P14(BI)	50	38	38
PC: Partial complete before Q4P14(CX)	121	38	38
PB: Partial complete before Q4P14(BX)	55	46	46
PC: Partial complete	71	37	37
PB: Partial complete	0	4	4
R1: Refusal, hang up	480	1,076	357
R2: Soft refusal	65	122	40
R3: Hostile refusal	298	151	50
R5: Refusal on conversion attempt	1,547	290	96
RN: Refusal for respondent not available	53	42	14
RP: Refusal by other person	14	21	7
CB: Specific callback	39	80	27
GB: General callback	63	121	40
BZ: Busy signal	146	106	35
NA: No answer	1,251	1,111	368
AM: Answering machine	139	966	320
LM: Answering machine, left message	358	0	0
DF: Deaf respondent	94	49	16
HC: Handicapped respondent	67	26	9
LG: Language problem	63	272	90
DD: Respondent deceased	5	3	3
IE: Ineligible, respondent too young	161	109	109
I2: Ineligible, respondent not minority	0	2,286	2,286
IEE: Ineligible estimate respondent not minority	0	0	2,968
BG: Business or government	1,903	1,264	1,264
DS: Disconnected	4,916	3,749	3,749
ED: Electronic device	122	261	261
FX: Fax line	691	428	428
NL: No listing	2	1	1
OT: Other misc.	89	79	79
TR: Terminated by Interviewer	14	6	2
UP: Unpublished number	15	6	6
SA: Spanish no answer	5	8	8
SB: Spanish answering machine	26	5	5
SG: Spanish general callback	25	24	24
SM: Spanish answering machine, left message	5	6	6
SZ: Spanish busy signal	13	0	0
PN: Purged nonworking numbers	3,312	2,399	2,399
<b>Total Sample</b>	<b>22,500</b>	<b>16,200</b>	<b>16,200</b>

Calculating response rates for a survey requires first a complete account of the disposition of all sample cases regarding the outcome of the interview attempt. Table 1 presents the complete sample disposition of the two samples in this survey. The first column is a description of the dispositions. The second column (OF98) contains the disposition figures for the general population sample. The third column (EF98) contains the disposition figures for the expanded sample *before* adjusting for the non-minority status of the non-completes. The last column (EF98Adj) lists the dispositions for the expanded sample *after* adjusting for the non-minority status of non-completes. The adjustment for non-minority status of the non-completes for the expanded sample requires more explanation.

### **Adjusting Non-completes for Non-Minority Status**

The calculation of response rates requires that sample units that are not eligible be excluded. For example, because the SPS is a household telephone survey, if a business phone number is encountered, the interview should be terminated and the case should be declared ineligible and be removed from the sample. Determining eligibility can be difficult when attempts to contact fail, as in attempts that result in busy signals, hang-ups, or answering machines. In such cases, an estimate would be obtained for the proportion of those households that would have been ineligible if the contacts had been successful. The Council of American Survey Research Organizations (CASRO) has proposed adjusting response rates to reflect the obtained proportion of ineligible households of all contacted and identified households.

In the expanded sample of the current survey, such estimation is more significant because of the high proportion of households that are ineligible due to the selection criterion of race/ethnicity. For this sample, if the respondent was not a Hispanic, African American, Asian, or American Indian, the household was considered ineligible. Because of the large proportion of non-minority households and a large number of refusal cases in this sample, the estimation of ineligibles is important to determine the response rate. The last column of Table 1 reflects the adjustment of the disposition of the expanded sample for non-minority households among those that refused or that were not successfully contacted (R1 through LG plus TR).

An estimated proportion of non-minority household was derived for the non-completes in the expanded sample. This proportion was derived by dividing the identified non-minority households (I2) by all identified households (CM through PB plus I2) in the expanded sample. The proportion was 0.67. In other words, about 67 percent of the identified cases in the expanded sample were non-minority households. Therefore, only about 33 percent of the identified cases were considered eligible. This latter rate was applied to rows R1 through LG and TR in the third column to obtain an estimated number of eligible cases among the no-contact cases, resulting in the reduced numbers in the corresponding cells in the last column. The rows that were affected by this adjustment are R1 through LG plus TR.

### **Sample Disposition Summary**

Table 2 contains a summary of the sample disposition details. It shows a total of 22,500 cases was released for the general population sample (OF98). For the expanded sample the total was 16,200 (EF98Adj).

Of the 22,500 cases released for the general population sample, 6,272 resulted in completion (CM), 2,704 in refusal (RF and RF2), 2,308 in no-contact (NA1, NA2, and SNA), and 11,216 in ineligible (IEH, IEE, and IEO). The 16,200 expanded sample cases were disposed, after adjustment for non-minority status among the non-completes, into the following: 1,008 completes, 689 refusals, 950 no-contacts, and 13,553 ineligible.

**TABLE 2**  
**Sample Disposition Summary**

Sample disposition Summary	OF98 (General Population Sample)	EF98 (Expanded Sample before Adjustment)	EF98Adj (Expanded Sample after Adjustment)
CM = (CM,CI,BI)	6,272	1,008	1,008
RF1 = (CX,BX,PC,PB)	247	125	125
RF2 = (R1,R2,R3,R5,RN,RP)	2,457	1,702	564
NA1 = (CB,GB,BZ,Am,LM,DF,HC,LG,TR)	983	1,626	539
NA2 = (NA)	1,251	1,111	368
SNA = (SA,SB,SG,SM,SZ)	74	43	43
IEH = (DD,IE)	166	112	112
IEE = Nonminority HH (I2,IEE)	0	2,286	5,254
IEO = (BG,DS,ED,FX,NL,OT,UP,PN)	11,050	8,187	8,187
<b>Total</b>	<b>22,500</b>	<b>16,200</b>	<b>16,200</b>

*Note 1: Disposition codes in parentheses refer to those in Table 1.*

## Response Rates

Table 3 contains four different response rates. The reason for inclusion of different response rates is that different organizations may have varying needs for presenting information and some response rates are more appropriate than others. A total of four response rates are calculated. These rates are based on definitions of response rates set by the CASRO.

The first two rows of Table 3 are two adjustment factors. The first adjustment factor (ADJ1) represents the percent of contacted households that are ineligible for the survey because of death, age, or minority status (for the expanded sample). This is 2.48 percent for the general population sample (OF98) and almost 68 percent for the expanded sample (EF98). Note that this is only 9 percent for the adjusted column (EF98(Adj)) since the minority adjustment has already been factored in to several rows of the sample disposition numbers, so the only remaining ineligible households are those due to age or death. The second adjustment factor (ADJ2) represents the percent of telephone numbers that are excluded from the sample because they are not residential households. For RDD surveys such as the 1998 Washington State Population Survey, this is usually around 50 percent of all sample numbers.

**Table 3**  
**Response Rate Calculations**

Response Rate Calculations	OF98 (General Population Sample)	EF98 (Expanded Sample before Adjustment)	EF98Adj (Expanded Sample after Adjustment)
ADJ1 = %INELIGIBLE = (IEH+IEE)/(CM +RF1+IEH+IEE)	2.48%	67.91%	9.00%*
ADJ2 = %OUT OF SAMPLE = IEO/TOTAL	49.11%	50.54%	50.54%
RR1 = CM/CM+RF1+RF2	69.88%	35.56%	59.40%
RR2 = CM/CM+RF1+(1-ADJ1)*RF2	<b>70.35%</b>	60.03%	<b>61.23%</b>
RR3 = CM/CM+RF1+RF2+NA1+SNA+NA2	55.58%	17.95%	38.08%
RR4 = CM/(CM+RF1+ (1-ADJ1)*(RF2+NA1+SNA)+ (1-ADJ2)*NA2)	<b>59.27%</b>	36.47%	<b>42.75%</b>

\* IEE removed from both the numerator and the denominator.

*Note 1: Disposition codes on right-hand side of the equation refer to those in Table 2.*

The four response rates displayed in the next four rows differ only in what is included in the denominator. To avoid confusion, the following discussion will not involve the EF98 column because the rates under this column are considered to be a less accurate representation of the expanded sample because it did not exclude the ineligible from the refusal and no-contact cases.

The first rate (RR1) is a crude rate. It is the ratio of completes over the sum of completes (CM) and refusals (RF1 and RF2). RF1 in the denominator refers to refusals after the identifying information was collected. RF2 refers to refusals before the identifying information was collected. This rate can be considered as a crude cooperation rate, i.e. the proportion of all successfully contacted cases that completed the interview. For the general population sample this rate is 69.9 percent and for the expanded sample (EF98(ADJ)) is 59.4 percent.

The second rate (RR2) is very similar to RR1 except that in RR2, the RF2 was adjusted for death and young age of the intended respondents (ADJ1). This rate is a refined cooperation rate. For the general population sample, it increases by about half percentage point from 69.88 to 70.35 percent. For the expanded sample, it increases by about two percentage points from 59.4 to 61.23 percent.

The third rate (RR3) takes into account those households that were never successfully contacted during the survey period, by including them in the denominator of the ratio. The denominator for this ratio includes: completed and partially completed interviews (CM), refusals (RF1 and RF2), call-backs (NA1), no-answers (NA2), and Spanish call-backs (SNA). By including the no-contact households without adjusting for ineligible, this rate is the most conservative of the four rates presented in Table 3. For the general population sample, this rate is about 56 percent. For the expanded sample, the estimated rate is about 38 percent.

The fourth rate (RR4) is similar to the RR3, but it takes into account adjustment for death and young age among the Spanish call-back cases (SNA), other call-back cases (NA1), and cases from which no identifying information was collected though they were contacted (RF2). In addition, this rate is adjusted for ineligible (ADJ2) among the no-answer cases (NA2). For the general population sample this leads to an adjusted rate over 59 percent. For the expanded sample, the estimated rate is almost 43 percent.

RR2 and RR4 are the two most often quoted rates with the former being generally referred to as the cooperation rate and latter referred to as the response rate.